

5 Listing of Claims:

This listing of claims will replace the listing of claims in the application.

1. (currently amended) A two-dimensional scanning apparatus comprising:

deflecting means deflector for two-dimensionally deflecting a light beam from a light source; and an optical system for directing the light beam deflected by said deflecting means deflector on a surface to be scanned, said scanning optical system including an optical element which has no reflecting surface having optical power, and is tilted and/or shifted.

2. (currently amended) A two-dimensional scanning apparatus according to claim 1,

15 wherein the light beam from the light source is adapted disposed so as to be obliquely incident on a reflecting surface of said deflecting means deflector, a one-dimensional direction of the two-dimensional directions is adapted to correspond to a direction along a plane of incidence plane of the oblique incidence, and said optical element is tilted about an axis perpendicular to the plane of incidence toward a side on which the light beam is 20 obliquely incident on said deflecting means deflector.

3. (original) A two-dimensional scanning apparatus according to claim 1, wherein in

at least a one-dimensional direction of the two-dimensional directions, the light beam from the light source is adapted to be obliquely incident relative to a central axis of a deflection 25 range of the light beam deflected by said deflecting means deflector, and said optical element is tilted in the one-dimensional direction toward a side on which the light beam is obliquely incident.

5 4. (original) A two-dimensional scanning apparatus according to claim 2, wherein
said optical element is shifted in the one-dimensional direction.

5. (original) A two-dimensional scanning apparatus according to claim 2, wherein
said optical system includes a second optical element shifted in the one-dimensional
10 direction, and said second optical element has no reflecting surface having optical power.

6. (currently amended) A two-dimensional scanning apparatus according to ~~any one~~
~~of claims 1 to 5~~ claim 1, wherein distortion on the surface to be scanned is optically
corrected by said optical system, or is corrected by a combination of optical correction by
15 said optical system, and electrical correction by a circuit for controlling said ~~deflecting~~
~~means~~ deflector.

7. (currently amended) An image displaying apparatus comprising: a two-
dimensional scanning apparatus recited in ~~any one of claims 1 to 5~~ claim 1; and
20 means for forming an image on the surface to be scanned, using said two-dimensional
scanning apparatus.

8. (original) An image displaying apparatus according to claim 7, further comprising
light source means for supplying three colour light beams, such as red, green and blue light
25 beams, and wherein a colour image is formed on the surface to be scanned by causing the
three colour light beams to be incident on said ~~deflecting means~~ deflector sequentially
and/or simultaneously.

5 9. (currently amended) A two-dimensional scanning apparatus comprising:

~~deflecting means a deflector~~ for two-dimensionally deflecting a light beam from a light source; and

a scanning optical system for directing the light beam deflected by said ~~deflecting means deflector~~ to a surface to be scanned, said scanning optical system including an optical

10 surface which is tilted at an angle larger than a maximum angle of view relative to a central axis of a two-dimensional deflection range of the light beam deflected by said ~~deflecting means deflector~~.

10. (currently amended) A two-dimensional scanning apparatus comprising:

15 ~~deflecting means a deflector~~ for two-dimensionally deflecting a light beam from a light source; and

a scanning optical system for directing the light beam deflected by said ~~deflecting means deflector~~ to a surface to be scanned, said scanning optical system including an optical

surface which is tilted relative to a central axis of a two-dimensional deflection range of
20 the light beam deflected by said ~~deflecting means deflector~~, and the surface to be scanned being tilted in the same direction as said tilt optical surface.

11. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein an optical element including said optical surface is tilted at an angle larger
25 than a maximum angle of view relative to the central axis of the two-dimensional deflection range.

5 12. (currently amended) A two-dimensional scanning apparatus according to claim 9
er-10, wherein the tilt direction of said optical surface is adapted to correspond to a first
one-dimensional direction of the two-dimensional directions.

10 13. (currently amended) A two-dimensional scanning apparatus according to claim 9
er-10, wherein the light beam from said light source is adapted to be incident obliquely
relative to at least one of two deflection axes of said ~~deflecting means~~ deflector.

15 14. (currently amended) A two-dimensional scanning apparatus according to claim 9
er-10, wherein the surface to be scanned is tilted in the same direction as said optical
surface tilted relative to the central axis of the two-dimensional deflection range.

20 15. (currently amended) A two-dimensional scanning apparatus according to claim 9
er-10, wherein said tilted optical surface is shifted relative to the central axis of the two-
dimensional deflection range.

25 16. (currently amended) A two-dimensional scanning apparatus according to claim 9
er-10, wherein where a normal at a surface vertex of said tilted optical surface is extended
toward a side of light emergence, said optical surface is shifted relative to the central axis
of the two-dimensional deflection range toward a side of extension of the normal.

25 17. (currently amended) A two-dimensional scanning apparatus according to claim 9
er-10, wherein a surface vertex of said tilted optical surface is located outside the two-
dimensional deflection range, and only a portion of said optical surface on one side of a

5 center of coordinates of said optical surface is used to guide the light beam deflected by
said ~~deflecting means~~ deflector to the surface to be scanned.

18. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein a plurality of said tilted optical surfaces are provided, and tilt amounts of
10 said optical surfaces are different from each other.

19. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein a plurality of said tilted optical surfaces are provided, and a tilt angle of said
optical surface disposed on a side of the surface to be scanned relative to the central axis
15 of the two-dimensional deflection range is larger than a tilt angle of said optical surface
disposed on a side of said ~~deflecting means~~ deflector relative to the central axis of the
two-dimensional deflection range.

20. (currently amended) A two-dimensional scanning apparatus according to claim 9
20 ~~or 10~~, wherein a plurality of said tilted optical surfaces are provided, and said optical
surfaces are shifted relative to the central axis of the two-dimensional deflection range by
shift amounts different from each other, respectively.

21. (currently amended) A two-dimensional scanning apparatus according to claim 9
25 ~~or 10~~, wherein a plurality of said tilted optical surfaces are provided, and a surface vertex
of said optical surface on a side of the surface to be scanned is more away from the
central axis of the two-dimensional deflection range than a normal at a surface vertex of
said optical surface on a side of said ~~deflecting means~~ deflector.

5 22. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein said tilted optical surface comprises an anamorphic surface.

10 23. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein said tilted optical surface comprises a rotational asymmetrical surface.

15 24. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein said tilted optical element comprises a meniscus lens whose concave
surface faces a side of said ~~deflecting means~~ deflector.

20 25. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein said tilted optical surface is disposed on a side closest to the scanned
surface in said scanning optical system.

25 26. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein said tilted optical element comprises a transmission optical element having
no reflecting surface.

30 27. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein said tilted optical element is formed of plastic material.

35 28. (currently amended) A two-dimensional scanning apparatus according to claim 9
~~or 10~~, wherein all portions on said tilted optical surface used to guide the light beam
deflected by said ~~deflecting means~~ deflector to the surface to be scanned are tilted at

5 angles larger than a maximum angle of view relative to the central axis of the two-dimensional deflection range.

29. (currently amended) A two-dimensional scanning apparatus according to claim 9
or 10, wherein there are provided a plurality of said tilted optical elements tilted at angles
10 larger than a maximum angle of view relative to the central axis of the two-dimensional
deflection range.

30. (currently amended) A two-dimensional scanning apparatus according to claim 9
or 10, wherein an angle of view with respect to a first one-dimensional direction of the
15 two-dimensional directions is narrower than an angle of view with respect to a second one-dimensional direction perpendicular to the first one-dimensional direction.

31. (currently amended) A two-dimensional scanning apparatus according to claim 9
or 10, wherein an angle of view with respect to a first one-dimensional direction of the
20 two-dimensional directions is wider than an angle of view with respect to a second one-dimensional direction perpendicular to the first one-dimensional direction.

32. (currently amended) A two-dimensional scanning apparatus according to claim 9
or 10, wherein the light beam incident on said ~~deflecting means~~ deflector is adapted to be
25 a convergent light beam.

33. (currently amended) A two-dimensional scanning apparatus according to claim 9
or 10, wherein distortion on the surface to be scanned is optically corrected by said
scanning optical system, or is corrected by a combination of optical correction by said

5 optical system, and electrical correction by a circuit for controlling said ~~deflecting means~~
deflector.

34. (currently amended) An image displaying apparatus comprising: a two-dimensional scanning apparatus recited in ~~any one of claims 9 to 33~~ claim 9; and
10 means for forming an image on the surface to be scanned, using said two-dimensional scanning apparatus.

35. (currently amended) An image displaying apparatus according to claim 34, further comprising ~~a light source~~ means for supplying three colour light beams, ~~such as~~
15 ~~red, green and blue light beams,~~ and wherein a colour image is formed on the surface to be scanned by causing the three colour light beams to be incident on said ~~deflecting means~~
deflector sequentially and/or simultaneously.

36. (new) A two-dimensional scanning apparatus according to claim 2, wherein
20 distortion on the surface to be scanned is optically corrected by said optical system, or is corrected by a combination of optical correction by said optical system, and electrical correction by a circuit for controlling said deflector.

37. (new) A two-dimensional scanning apparatus according to claim 3, wherein
25 distortion on the surface to be scanned is optically corrected by said optical system, or is corrected by a combination of optical correction by said optical system, and electrical correction by a circuit for controlling said deflector.

5 38. (new) A two-dimensional scanning apparatus according to claim 4, wherein
distortion on the surface to be scanned is optically corrected by said optical system, or is
corrected by a combination of optical correction by said optical system, and electrical
correction by a circuit for controlling said deflector.

10 39. (new) A two-dimensional scanning apparatus according to claim 5, wherein
distortion on the surface to be scanned is optically corrected by said optical system, or is
corrected by a combination of optical correction by said optical system, and electrical
correction by a circuit for controlling said deflector.

15 40. (new) An image displaying apparatus comprising: a two-dimensional scanning
apparatus recited in claim 2; and means for forming an image on the surface to be
scanned, using said two-dimensional scanning apparatus.

20 41. (new) An image displaying apparatus comprising: a two-dimensional scanning
apparatus recited in claim 3; and means for forming an image on the surface to be
scanned, using said two-dimensional scanning apparatus.

25 42. (new) An image displaying apparatus comprising: a two-dimensional scanning
apparatus recited in claim 4; and means for forming an image on the surface to be
scanned, using said two-dimensional scanning apparatus.

43. (new) An image displaying apparatus comprising: a two-dimensional scanning
apparatus recited in claim 5; and means for forming an image on the surface to be
scanned, using said two-dimensional scanning apparatus.

5

44. (new) A two-dimensional scanning apparatus according to claim 10, wherein an optical element including said optical surface is tilted at an angle larger than a maximum angle of view relative to the central axis of the two-dimensional deflection range.

10 45. (new) A two-dimensional scanning apparatus according to claim 10, wherein the tilt direction of said optical surface is adapted to correspond to a first one-dimensional direction of the two-dimensional directions.

15 46. (new) A two-dimensional scanning apparatus according to claim 10, wherein the light beam from said light source is adapted to be incident obliquely relative to at least one of two deflection axes of said deflector.

20 47. (new) A two-dimensional scanning apparatus according to claim 10, wherein the surface to be scanned is tilted in the same direction as said optical surface tilted relative to the central axis of the two-dimensional deflection range.

48. (new) A two-dimensional scanning apparatus according to claim 10, wherein said tilted optical surface is shifted relative to the central axis of the two-dimensional deflection range.

25

49. (new) A two-dimensional scanning apparatus according to claim 10, wherein where a normal at a surface vertex of said tilted optical surface is extended toward a side of light emergence, said optical surface is shifted relative to the central axis of the two-dimensional deflection range toward a side of extension of the normal.

5

50. (new) A two-dimensional scanning apparatus according to claim 10, wherein a surface vertex of said tilted optical surface is located outside the two-dimensional deflection range, and only a portion of said optical surface on one side of a center of coordinates of said optical surface is used to guide the light beam deflected by said 10 deflector to the surface to be scanned.

51. (new) A two-dimensional scanning apparatus according to claim 10, wherein a plurality of said tilted optical surfaces are provided, and tilt amounts of said optical surfaces are different from each other.

15

52. (new) A two-dimensional scanning apparatus according to claim 10, wherein a plurality of said tilted optical surfaces are provided, and a tilt angle of said optical surface disposed on a side of the surface to be scanned relative to the central axis of the two-dimensional deflection range is larger than a tilt angle of said optical surface disposed on a 20 side of said deflector relative to the central axis of the two-dimensional deflection range.

53. (new) A two-dimensional scanning apparatus according to claim 10, wherein a plurality of said tilted optical surfaces are provided, and said optical surfaces are shifted relative to the central axis of the two-dimensional deflection range by shift amounts 25 different from each other, respectively.

54. (new) A two-dimensional scanning apparatus according to claim 10, wherein a plurality of said tilted optical surfaces are provided, and a surface vertex of said optical surface on a side of the surface to be scanned is more away from the central axis of the

5 two-dimensional deflection range than a normal at a surface vertex of said optical surface
on a side of said deflector.

55. (new) A two-dimensional scanning apparatus according to claim 10, wherein
said tilted optical surface comprises an anamorphic surface.

10

56. (new) A two-dimensional scanning apparatus according to claim 10, wherein
said tilted optical surface comprises a rotational asymmetrical surface.

57. (new) A two-dimensional scanning apparatus according to claim 10, wherein
15 said tilted optical element comprises a meniscus lens whose concave surface faces a side
of said deflector.

58. (new) A two-dimensional scanning apparatus according to claim 10, wherein
said tilted optical surface is disposed on a side closest to the scanned surface in said
20 scanning optical system.

59. (new) A two-dimensional scanning apparatus according to claim 10, wherein
said tilted optical element comprises a transmission optical element having no reflecting
surface.

25

60. (new) A two-dimensional scanning apparatus according to claim 10, wherein
said tilted optical element is formed of plastic material.

5 61. (new) A two-dimensional scanning apparatus according to claim 10, wherein all
portions on said tilted optical surface used to guide the light beam deflected by said
deflector to the surface to be scanned are tilted at angles larger than a maximum angle of
view relative to the central axis of the two-dimensional deflection range.

10 62. (new) A two-dimensional scanning apparatus according to claim 10, wherein
there are provided a plurality of said tilted optical elements tilted at angles larger than a
maximum angle of view relative to the central axis of the two-dimensional deflection range.

15 63. (new) A two-dimensional scanning apparatus according to claim 10, wherein an
angle of view with respect to a first one-dimensional direction of the two-dimensional
directions is narrower than an angle of view with respect to a second one-dimensional
direction perpendicular to the first one-dimensional direction.

20 64. (new) A two-dimensional scanning apparatus according to claim 10, wherein an
angle of view with respect to a first one-dimensional direction of the two-dimensional
directions is wider than an angle of view with respect to a second one-dimensional
direction perpendicular to the first one-dimensional direction.

25 65. (new) A two-dimensional scanning apparatus according to claim 10, wherein
the light beam incident on said deflector is adapted to be a convergent light beam.

66. (new) A two-dimensional scanning apparatus according to claim 10, wherein
distortion on the surface to be scanned is optically corrected by said scanning optical

5 system, or is corrected by a combination of optical correction by said optical system, and
electrical correction by a circuit for controlling said deflector.

67. (new) An image displaying apparatus comprising: a two-dimensional scanning
apparatus recited in claim 10; and means for forming an image on the surface to be
10 scanned, using said two-dimensional scanning apparatus.